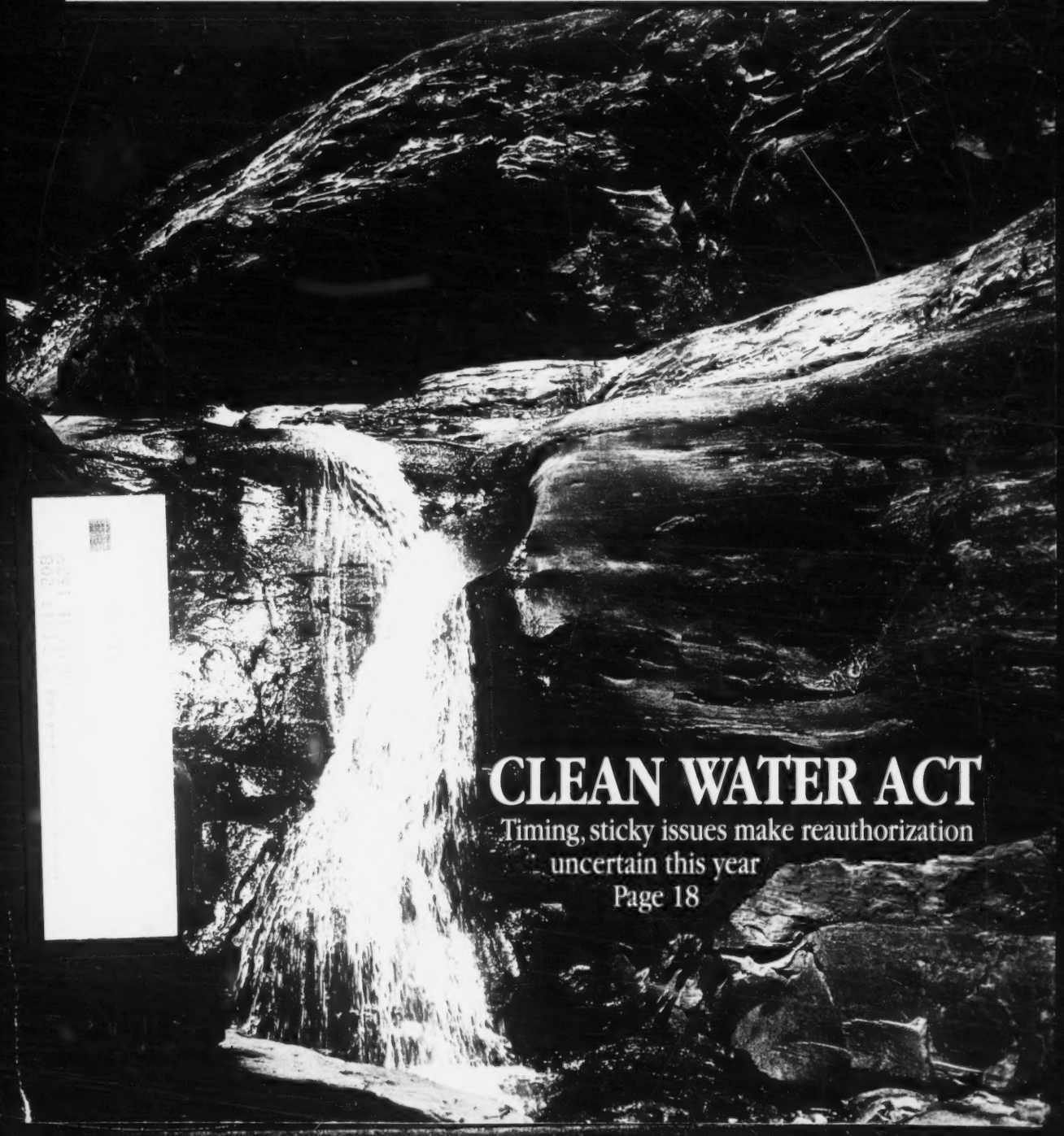
CHEMICAL & ENGINEERING NEWS

C&EN

FEBRUARY 17, 1992

CHEMICAL COMPANY EARNINGS CONTINUED THREE-YEAR DECLINE IN 1991 PAGE 10



CLEAN WATER ACT

Timing, sticky issues make reauthorization uncertain this year

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CHEMICAL & ENGINEERING NEWS

C&EN

FEBRUARY 17, 1992

NEWS OF THE WEEK

- Dow Corning releases internal documents citing problems with silicone breast implants, names new chairman and chief executive officer to tackle crisis resulting from FDA's moratorium on sale of these implants. Page 4
- Spacecraft Ulysses detects unexpected changes in Jovian system as it flies by Jupiter on its way to study polar regions of the Sun. Page 5
- President Bush moves up deadline for U.S. phaseout of CFCs to the end of 1995, four years earlier than specified by Montreal protocol. Page 5
- In an extension of its patent application last summer covering some 350 human brain gene sequences, NIH files second application for 2375 more, justifying its move as promoting openness in science. Page 6
- Hoffmann-La Roche's new licensing policy for polymerase chain reaction technology eases restrictions on diagnostic uses, and is expected to provide wider access and accelerated research into new applications. Page 6

COVER: Photo by Grant Heilman Photography Inc.

Volume 70, Number 7
CENEAR 70 (7) 1-56
ISSN 0009-2347

BUSINESS

Earnings of major chemical companies dropped again in the fourth quarter, marking the 10th straight quarter of decline and making 1991 another down year. Page 10

SCIENCE/TECHNOLOGY

Journal illustration enters computer age in *Protein Science*, which comes with a diskette containing "kinemage" interactive graphics—molecular structures and other images that users can view and manipulate in 3-D. Page 26

New software system for hazardous-waste-site analysis helps engineers manage, evaluate, and visualize huge quantity of data collected during waste site projects. Page 30

Union Carbide opens multiplastics recycling plant in New Jersey that annually will process 54 million lb of plastic film and bottles from curbside recycling programs. Page 31

EDUCATION

In math and science, U.S. schoolchildren are behind their counterparts in other countries, according to new study cofunded by NSF and the Department of Education. Page 34

ACS ELECTION

Views on ACS matters are offered by four candidates for Region II director in a special election to fill the vacancy created by Frederick Bailey's death. Page 36

ACS NEWS

Chemical Abstracts Service has revamped management staff in three divisions, creating two new director positions in editorial operations, reducing positions in other areas. Page 41

GOVERNMENT

Bipartisan rewrite of 1987 Clean Water Act, now up for renewal in Congress, will likely face rough passage because of the shift in focus it proposes—from end-of-pipe cleanup controls to entire watershed protection. Page 18

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Chemical & Engineering News
1155—16th St., N.W., Washington, D.C. 20036

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Published by
AMERICAN CHEMICAL SOCIETY
(202) 872-4600; TDD (202) 872-4432
John Kistler Crum, Executive Director
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Subscription Rates 1992: Printed editions: nonmembers U.S. 1 yr. $105, 2 yr. $189; outside U.S. 1 yr. $141, 2 yr. $261. Air freight rates available on request. Rates above do not apply to nonmember subscribers in Japan, who must enter subscription orders with Maruzen Co. Ltd., 3-10 Nihonbashi 2-chome, Chuo-ku, Tokyo 103, Japan. Tel: (03) 272-7211. Single copies: Current $15. Rates for back issues and volumes are available from Microforms & Back Issues Office, ACS, 1155—16th St., N.W., Washington, D.C. 20036. Back and current issues available on microfilm and microfiche. Rates on request from Microform Program, ACS.

Chemical & Engineering News (ISSN 0009-2347) is published weekly except for the last week in December by the American Chemical Society at 1155—16th St., N.W., Washington, D.C. 20036. Second-class postage paid at Washington, D.C., and additional mailing offices. POSTMASTER: Send address changes to Chemical & Engineering News, Membership & Subscription Services, P.O. Box 3337, Columbus, Ohio 43210. ACS assumes no responsibility for the statements and opinions advanced by the contributors to its publications.

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LETTERS

URGENT APPEAL FOR HELP

The following is an open letter submitted for publication in a number of western science publications:

We appeal from the pages of your magazine to the world scientific community to express our deep concern about a dramatic situation: The absence of hard currency completely deprives scientific institutions of Russia and other states of the former U.S.S.R. of subscriptions to foreign scientific periodicals in 1992. Our scientists [will] be totally isolated from the most important sources of scientific information. At the present time, when scientific progress is simply inconceivable without the tightest international cooperation of scientists, when the development of each field of science proceeds like a chain reaction, and when positive feedback between scientific publications and response to them is of decisive importance, the isolation of hundreds of thousands of our scientists from the outside world—inevitable under the conditions of deprivation of foreign scientific literature—will have pernicious consequences for the scientific community all over the world.

Therefore, we appeal for urgent help—for the sake of humanitarian purposes and our mutual interests—to find possibilities of continuing delivery of foreign scientific periodicals to our country in 1992 on the same scale as in 1991, or, at least, on a size sufficient to provide the 1991 subscription level for central scientific libraries of Moscow, Sanct-Petersburg, Nobosibirsk, Ecaterinburg, Vladivostok, capitals of other states of the former U.S.S.R., and libraries of largest institutes of the Russian Academy of Sciences.

We thank our foreign colleagues in advance for any manifestation of goodwill in assistance to overcome these most serious difficulties met by our scientists.

Zhores I. Alferov — **Leonid V. Keldysh**
Vitalii L. Ginzburg — **Victor P. Maslov**
Vitalii I. Goldanskii — **Aleksandr S. Spirin**
Vladimir I. Keilis-Borok
Members of the Russian Academy of Sciences

Perfluorocarbon flammability

During recent months there has been a series of letters concerning the flammability of perfluorocarbon compounds. In the original letter, Bob Dawe et al. (C&EN, June 10, 1991, page 2) reported that a supposedly inert perfluorocarbon liquid appeared to react with oxygen to produce considerably more heat and pressure than was anticipated. They also asked that suppliers of these materials reevaluate their safety data sheets.

Jay E. Taylor (C&EN, Sept. 23, 1991, page 2) indicated that an experiment containing 5% cyclohexanone in perfluorotoluene inflamed when heated to 200 °C in a 2000 psig oxygen atmosphere. Unfortunately, exact experimental details are not reported in either case.

Karl O. Christe (C&EN, Oct. 7, 1991, page 2) drew attention to the fact that Teflon will burn in pure oxygen although it is difficult to ignite. It should be noted that Teflon has an oxygen index (ASTM-D-2863-70) of 95 and thus is flammable in a mixture of 95% oxygen and 5% nitrogen at atmospheric pressure. This fact is reported in a number of places in the fire science literature, although it has little relevance to either the Dawe or Taylor reports.

In response to the Dawe et al. letter, Louis L. Ferstandig (C&EN, Aug. 5, 1991, page 2) states, "These statements should be considered along with almost 50 years of experience of saturated perfluorocarbons and chloroperfluorocarbons in oxy-

Corrections

- Jan. 13, page 36: The contact for the April 21–24 Hazardous Material Spills Conference is Technical Resources Inc., Attn: Sonja Cohen, 3202 Tower Oaks Blvd., Suite 200, Rockville, Md. 20852, phone (301) 231-5250.
- Jan. 27, page 32: The postdoctoral fellow involved in earlier University of California, Berkeley, studies was Bruce H. Weiller (not Wilder).

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Chemical Earnings Down Again in Fourth Quarter and the Year

William J. Storck,
C&EN Northeast News Bureau

Chemical earnings fell again in the fourth quarter, giving 1991 a perfect record of declining results for all four quarters. Earnings were down both at chemical companies and at oil firms and diversified corporations that also produce chemicals. As in past quarters, only pharmaceutical companies registered earnings growth.

And again, the culprit was low domestic demand, driving down chemical plant capacity utilization and prices. In addition, companies complained of higher raw material costs in the fourth quarter, which put a squeeze on profitability.

As a result, earnings fell 16% from fourth-quarter 1990 for the 28 chemical companies regularly tracked by C&EN that have reported fourth-quarter results. This marked the 10th straight quarter of declining earnings. In addition, sales for the second straight quarter were off 4% on an annual basis. For oil and diversified companies, the pattern was repeated in the quarter, only much more drastically, with earnings down 47% for chemical-producing oil companies and down 20% for diversified companies that produce chemicals. In both cases, sales fell—18% for the oil companies and 3% for diversified manufacturers. Pharmaceutical firms, however, continued their unabated growth, scoring an 18% rise in earnings and a 9% increase in sales.

The reason for the drop: The recession still has a headlock on the chemical economy; major markets for chemicals are still in the grips of the recession, holding down domestic demand for chemicals; the housing market, although showing some signs of a slight upturn at the end of the quarter, is still way down; and any possible resurgence in residential housing is more than offset by continued depressed commercial construction. The automo-

Chemical industry leaders for fourth quarter . . .

Sales				Earnings[a]			Profitability		
Rank 1991		$ Millions	Rank 1990		$ Millions	Rank 1990		Earnings as % of sales	Rank 1990
1	Dow Chemical	$ 4563.0	1	Dow Chemical	$148.0	1	International Flavors	13.5%	1
2	Monsanto	2126.0	2	W. R. Grace	79.1	2	Loctite	12.7	4
3	W. R. Grace	1613.3	3	Monsanto	66.0	22	Great Lakes Chemical	12.3	2
4	American Cyanamid	1334.9	5	American Cyanamid	65.9	5	Betz Laboratories	11.2	6
5	Union Carbide	1151.0	4	Air Products	64.2	3	Nalco Chemical	11.0	3
6	Air Products	760.5	9	Ethyl	52.3	4	IMC Fertilizer	8.7	7
7	Arco Chemical	747.0	8	Great Lakes Chemical	39.7	8	Air Products	8.4	9
8	Hercules	710.0	6	Nalco Chemical	36.9	9	Ethyl	7.9	8
9	Ethyl	659.7	11	Morton International	34.8	10	Crompton & Knowles	7.9	11
10	Rohm & Haas	658.3	10	Hercules	34.1	14	Morton International	6.8	12

. . . and for full-year 1991

Sales				Earnings[a]			Profitability		
Rank 1991		$ Millions	Rank 1990		$ Millions	Rank 1990		Earnings as % of sales	Rank 1990
1	Dow Chemical	$18,807.0	1	Dow Chemical	$962.0	1	International Flavors	16.6%	1
2	Monsanto	8,864.0	2	Monsanto	621.0	2	Loctite	13.6	3
3	W. R. Grace	6,049.1	3	American Cyanamid	358.8	3	Great Lakes Chemical	12.0	2
4	American Cyanamid	4,986.2	5	Air Products	241.7	6	Betz Laboratories	11.3	5
5	Union Carbide	4,877.0	4	W. R. Grace	219.2	9	Nalco Chemical	10.9	4
6	Air Products	2,967.0	7	Ethyl	213.7	7	Ethyl	8.3	9
7	Hercules	2,900.0	6	International Flavors	168.7	10	IMC Fertilizer	8.2	11
8	Arco Chemical	2,837.0	8	Rohm & Haas	163.1	8	Air Products	8.1	10
9	Rohm & Haas	2,763.0	9	Great Lakes Chemical	157.5	11	Crompton & Knowles	8.0	12
10	Ethyl	2,570.0	12	Arco Chemical	151.0	4	Georgia Gulf	7.3	6
							Morton International	7.3	13

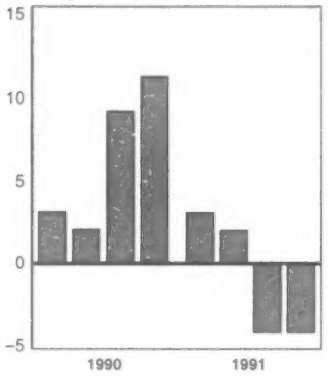
Note: Based on 30 chemical companies listed on page 12. a After taxes.

Chemical industry 1991 fourth-quarter results

- **Sales declined 4%**
- **Earnings dropped 15%**
- **Profit margins dipped to 4.0%**
- **Production was up 1.4%**
- **But prices fell almost 2%**

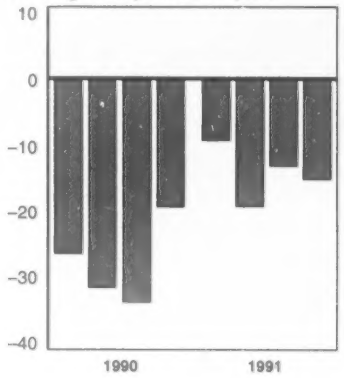
Sales

% change from year-earlier quarter



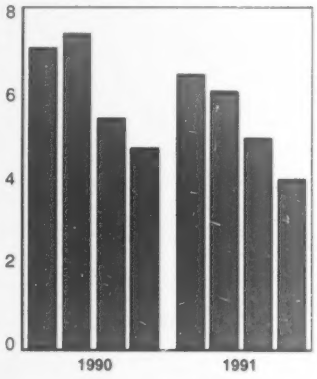
Earnings

% change from year-earlier quarter



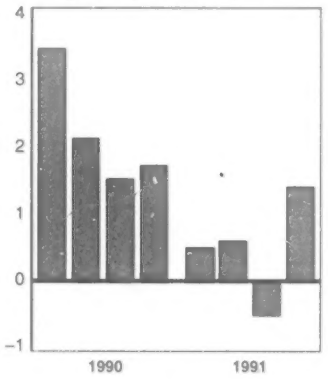
Profit margins

After-tax earnings as % of sales



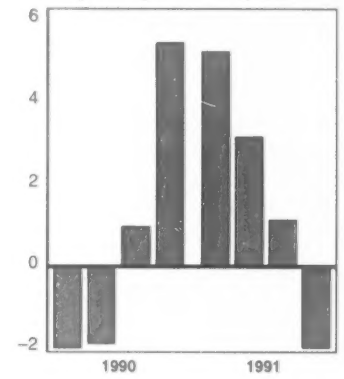
Production

% change from year-earlier quarter



Prices

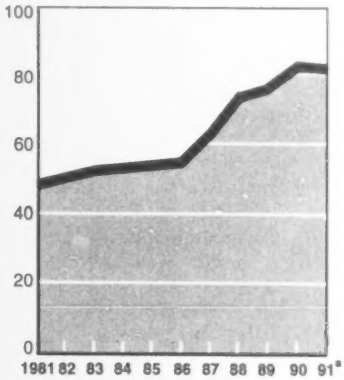
% change from year-earlier quarter



Sales decreased 1% in 1991 to $83.4 billion, as earnings fell 14% to $4.6 billion, resulting in a profit margin decline to 5.5%

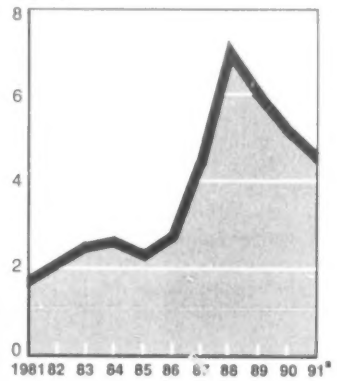
Annual sales

$ Billions



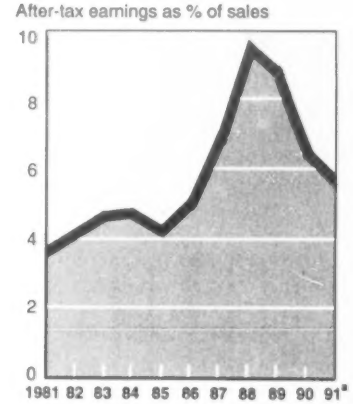
Annual earnings

$ Billions



Annual profit margins

After-tax earnings as % of sales



Note: All sales, earnings, and profit margin data are based on 30 chemical companies listed on page 12. ■ C&EN estimates.

Chemical sales, earnings, profitability suffer in fourth quarter and full-year 1991

	FOURTH-QUARTER 1991						FULL-YEAR 1991					
	Sales	Earnings[a]	Change from 1990		Profit margin[b]		Sales	Earnings[a]	Change from 1990		Profit margin[b]	
	($ millions)		Sales	Earnings	1991	1990	($ millions)		Sales	Earnings	1991	1990
Air Products	$ 760.5	$ 64.2	5%	6%	8.4%	8.4%	$ 2,967.0	$ 241.7	0%	4%	8.1%	7.9%
American Cyanamid	1,334.9	65.9	18	17	4.9	5.0	4,986.2	358.8	9	14	7.2	6.9
Arco Chemical	747.0	31.0	−2	41	4.1	2.9	2,837.0	151.0	0	−42	5.3	9.3
Betz Laboratories	165.6	18.6	9	16	11.2	10.5	665.6	75.5	12	15	11.3	11.0
Cabot	384.8	16.6	−4	21	4.3	3.4	1,466.5	42.6	−7	6	2.9	2.6
Crompton & Knowles	110.0	8.7	9	19	7.9	7.2	450.2	35.9	15	20	8.0	7.7
Dow Chemical	4,563.0	148.0	−11	−46	3.2	5.3	18,807.0	962.0	−5	−30	5.1	7.0
Ethyl	659.7	52.3	−2	−10	7.9	8.6	2,570.0	213.7	2	−5	8.3	8.9
First Mississippi	132.3	1.9	12	def	1.4	def	555.3	9.5	7	91	1.7	1.0
H. B. Fuller	220.6	8.8	9	9	4.0	4.0	852.9	27.7	8	31	3.2	2.7
Georgia Gulf	182.8	12.1	−20	−36	6.6	8.3	838.3	61.5	−10	−36	7.3	10.2
B. F. Goodrich	607.4	−16.9	5	def	def	2.4	2,471.6	4.8	2	−96	0.2	4.8
W. R. Grace	1,613.3	79.1	−6	9	4.9	4.2	6,049.1	219.2	1	8	3.6	3.4
Great Lakes Chemical	321.9	39.7	11	8	12.3	12.6	1,307.6	157.5	23	12	12.0	13.2
Hercules	710.0	34.1	−14	39	4.8	3.0	2,900.0	137.5	−9	17	4.7	3.7
IMC Fertilizer	252.6	22.1	−9	−11	8.7	9.0	1,100.0	90.0	−3	2	8.2	7.8
Imcera	420.2	21.3	6	8	5.1	5.0	1,663.5	105.8	8	33	6.4	5.1
International Flavors	225.7	30.4	3	5	13.5	13.2	1,017.0	168.7	6	8	16.6	16.3
Loctite	141.5	18.0	−1	10	12.7	11.4	561.2	76.3	1	13	13.6	12.1
Lubrizol	na	na	na	na	na	11.2	na	na	na	na	na	9.5
Monsanto	2,126.0	66.0	−3	500	3.1	0.5	8,864.0	621.0	−1	27	7.0	5.4
Morton International	508.4	34.8	8	16	6.8	6.4	1,962.6	143.4	9	7	7.3	7.4
Nalco Chemical	334.6	36.9	16	6	11.0	12.2	1,237.3	134.6	16	6	10.9	11.9
Olin	594.7	10.2	−7	15	1.7	1.4	2,275.4	67.7	−12	−18	3.0	3.2
Petrolite	81.2	4.2	1	33	5.1	3.9	323.5	14.8	9	12	4.6	4.4
Quantum Chemical	636.7	−27.8	−17	def	def	1.3	2,532.4	(81.2)	−5	def	def	0.4
Rohm & Haas	658.3	29.5	−3	−20	4.5	5.4	2,763.0	163.1	−2	−21	5.9	7.3
Stepan	na	na	na	na	na	3.1	na	na	na	na	na	3.7
Union Carbide[c]	1,151.0	−41.0	−15	def	def	2.0	4,877.0	44.0	−7	−82	0.9	4.6
Witco	390.5	19.5	−6	85	5.0	2.6	1,630.5	73.5	0	8	4.5	4.2
TOTAL[d]	$20,035.2	$ 788.1	−4%	−16%	3.9%	4.5%	$80,531.7	$4320.6	−1%	−14%	5.4%	6.2%

a After-tax earnings from continuing operations, excluding nonrecurring and extraordinary items. b After-tax earnings as a percentage of sales. c Excludes results from industrial gases, now carried as a discontinued business. d For 28 companies reporting. def = deficit. na = not available.

bile industry, another major market for chemicals, also continues to suffer from lackluster performance.

The result was declining demand for the quarter. Government data show that although shipments of chemicals and allied products increased only about 1% for the quarter to a seasonally adjusted $74.9 billion, demand for industrial chemicals, which are largely commodities, declined more than 6% to $37.1 billion. For the full year, the Commerce Department indicates that shipments of chemicals edged up less than 1% to $288 billion, while industrial chemical shipments slipped about 3% to $152 billion.

On a poundage basis, production of chemicals and allied products for the fourth quarter increased 1.4% from the same period the year before, but output of industrial chemicals was up about 4%.

However, a slight rise in production and the resulting increase in capacity use, which remains in the 80% range, were largely ignored when it came to pricing. Selling prices of chemicals and allied products for the quarter declined almost 2% from the same period in 1990, according to Labor Department data. However, prices for industrial chemicals were off more than 7%.

For instance, at Dow Chemical, Frank P. Popoff, the company's president and chief executive officer, put a real face on the price decline for 1991 at that company when he said, "Pricing [for the full year] affected by weak industry fundamentals declined 4%, impacting profits by about $800 million."

The result, of course, was that earnings had no chance. For the 28 companies of C&EN's 30-company sample that have reported thus far, fourth-quarter earnings from continuing operations, ex-

Earnings for full year are down at oil and diversified firms, up only for pharmaceuticals

	FOURTH-QUARTER 1991						FULL-YEAR 1991					
	Sales	Earnings[a]	Change from 1990		Profit margin[b]		Sales	Earnings[a]	Change from 1990		Profit margin[b]	
	($ millions)		Sales	Earnings	1991	1990	($ millions)		Sales	Earnings	1991	1990
OIL AND GAS COMPANIES												
Amoco	$ 7,182.0	$ 200.0	−22%	−63%	2.8%	5.9%	$ 28,297.0	$ 1,531.0	−10%	−20%	5.4%	6.1%
Chevron	10,400.0	283.0	−25	−53	2.7	5.5	40,900.0	1,359.0	−4	−36	3.3	5.0
Exxon	30,870.0	1120.0	−12	−28	3.6	4.4	116,342.0	5,600.0	−1	12	4.8	4.3
Fina	859.1	21.8	−28	14	2.5	1.6	3,336.4	42.0	−16	−67	1.3	3.2
Kerr-McGee	872.1	34.8	−22	−14	4.0	3.6	3,274.1	101.6	−11	−28	3.1	3.8
Mobil	16,628.0	389.0	−14	−5	2.3	2.1	62,682.0	1,895.0	−3	−1	3.0	3.0
Occidental Petroleum	2,609.0	3.0	−25	−95	0.1	1.9	10,096.0	379.0	−12	15	3.8	2.9
Phillips Petroleum	3,370.0	48.0	−24	−84	1.4	6.6	13,260.0	257.0	−5	−61	1.9	4.7
Shell Oil	6,427.0	94.0	−21	−76	1.5	4.8	24,700.0	319.0	−7	−67	1.3	3.7
Sun Co.	2,970.0	−35.0	−25	def	def	0.5	11,930.0	70.0	−9	−69	0.6	1.7
Texaco	9,755.0	295.0	−25	−38	3.0	3.6	38,322.0	1,243.0	−8	−19	3.2	3.7
Unocal	2,769.0	31.0	−18	−72	1.1	3.3	10,895.0	127.0	−8	−39	1.2	2.6
TOTAL	**$94,711.2**	**$2484.6**	**−18%**	**−47%**	**2.6%**	**4.0%**	**$364,034.5**	**$12,923.6**	**−5%**	**−15%**	**3.6%**	**4.0%**
DIVERSIFIED MANUFACTURERS												
Allied-Signal	$ 3,004.0	$ 115.0	−4%	−7%	3.8%	3.4%	$ 11,831.0	$ 342.0	−4%	−26%	2.9%	3.7%
Du Pont	9,765.0	232.0	−12	−43	2.4	3.7	38,695.0	1,716.0	−3	−23	4.4	5.6
Eastman Kodak	5,082.0	197.0	−1	−40	3.9	6.3	19,419.0	1,050.0	3	−17	5.4	6.7
Engelhard	586.8	22.8	−11	7	3.9	3.3	2,436.4	87.9	−17	25	3.6	2.4
FMC	1,007.9	30.2	3	11	3.0	2.8	3,899.4	173.1	5	11	4.4	4.2
Ferro Corp.	265.2	12.3	−6	104	4.6	2.1	1,056.9	36.5	−6	34	3.5	2.4
3M	3,224.0	259.0	−2	−12	8.0	9.0	13,340.0	1,154.0	2	−12	8.7	10.0
NL Industries	195.6	−6.9	−14	def	def	4.6	840.3	−24.0	−7	def	def	10.3
PPG Industries	1,400.0	47.4	−7	−53	3.4	6.8	5,700.0	254.9	−5	−46	4.5	7.9
Vulcan Materials	254.8	13.2	−6	−25	5.2	6.5	1,007.5	69.0	−9	−43	6.8	10.9
TOTAL	**$19,708.4**	**$ 922.0**	**−3%**	**−20%**	**4.7%**	**5.0%**	**$ 98,225.5**	**$ 4,859.4**	**−2%**	**−22%**	**4.9%**	**6.2%**
PHARMACEUTICAL COMPANIES												
Abbott Laboratories	$ 1,886.3	$ 314.7	10%	12%	16.7%	16.4%	$ 6,876.6	$ 1,088.7	12%	13%	15.9%	15.7%
American Home Products	1,819.8	372.6	13	27	20.5	18.2	7,079.4	1,375.3	4	22	19.4	16.6
Baxter International	2,390.0	184.0	10	3	7.7	8.2	8,921.0	591.0	10	21	6.6	6.0
Bristol-Myers Squibb	2,937.2	510.0	7	20	17.4	15.6	11,159.4	2,055.5	8	18	18.4	17.0
Eli Lilly	1,572.6	311.1	9	22	19.8	17.7	5,725.7	1,314.7	10	17	23.0	21.7
Pfizer	1,850.2	195.9	4	27	10.6	8.7	6,950.0	917.1	8	14	13.2	12.5
Schering-Plough	865.6	149.0	8	14	17.2	16.3	3,615.6	645.6	9	14	17.9	17.0
Upjohn	911.4	136.4	14	18	15.0	14.5	3,401.8	537.4	13	8	15.8	16.4
Warner Lambert	1,337.0	121.0	7	15	9.0	8.5	5,059.0	558.8	8	15	11.0	10.3
TOTAL	**$15,570.1**	**$2294.7**	**9%**	**18%**	**14.7%**	**13.5%**	**$ 58,788.5**	**$ 9,084.1**	**9%**	**16%**	**15.5%**	**14.5%**

a After tax earnings from operations excluding significant extraordinary and nonrecurring items. b After tax earnings as a percentage of sales. **def** = deficit.

cluding any significant unusual items, tumbled 16% from a year earlier to a combined $788 million. Meanwhile, total sales of the 28 companies dipped 4% to $20.0 billion.

For the full year, earnings for the 28 companies fell 14% from 1990 to $4.32 billion, marking the third straight year of declining earnings in the chemical industry. Sales in 1991 also decreased, but only 1% to $80.5 billion.

And, of course, profitability continued to slide. In the fourth quarter, profit margins for the 28 chemical companies averaged 3.9%, down from 4.5% in fourth-quarter 1990 and down from almost 5.0% in the third quarter of 1991. For the full-year 1991, profitability averaged 5.4% for the companies reporting, compared with 6.2% for the previous year.

Again, commodity chemicals, and petrochemicals in particular, appeared to be the culprit. For instance, the three companies that showed losses for the quarter—B. F. Goodrich, Quantum Chemical, and Union Carbide—are heavily involved in petrochemicals or their derivatives.

Union Carbide is a good case in point. In the fourth quarter, the company had a loss from continuing operations, excluding a $46 million charge against earnings

from restructuring, of $41 million. However, its industrial gases business, now carried as "discontinued operations," pending the spin-off of that unit, recorded earnings of $29 million, up 16% from the same period a year earlier.

Chemical-producing oil companies are also a good place to judge petrochemical results, and they were not at all good in the fourth quarter. At seven oil companies that have significant chemical operations—Exxon, Mobil, Occidental Petroleum, Phillips Petroleum, Shell Oil, Texaco, and Unocal—earnings from chemical operations dropped an average 45% to an aggregate $221 million from the same period a year earlier. Almost all of the companies attributed the declines to lower selling prices than were in effect during the year-earlier quarter.

Although the fourth quarter and the year did not appear to be good for the chemical industry, there may be a ray of hope for 1992: The fourth-quarter decline was not widespread through the chemical industry, but was confined largely to producers of commodity chemicals. Besides the three companies that showed losses for the fourth quarter, only five others had declines in earnings from the same period a year earlier, leaving 20 companies with earnings gains.

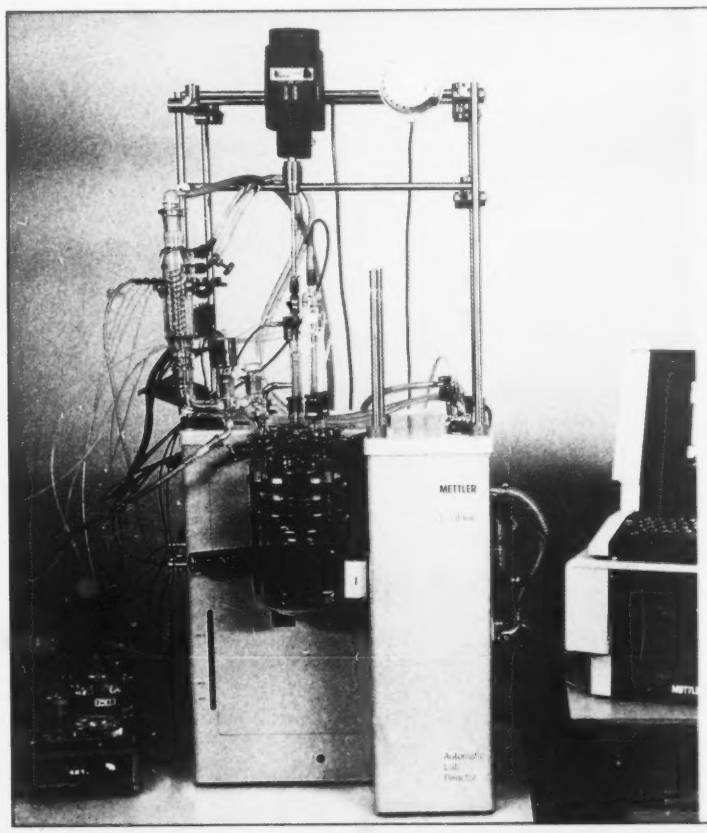
If the three companies with earnings losses are factored out, then earnings for the remaining group declined just 2% from the year-earlier quarter. If all eight of the companies with losses or declines are removed from the list, the remaining 20 chemical companies had an aggregate 27% increase in earnings on relatively flat sales. And these 20 companies had a total profit margin of 5.4%, compared with 4.3% in fourth-quarter 1990.

Thus many chemical companies are optimistic about 1992 and much of the optimism is tied both to improving economies and to restructuring and other cost-cutting measures.

At Witco, William R. Toller, chairman and chief executive officer, says, "Our continuing program of cost control and our policy of investment in modernization to improve operating efficiencies and achieve economies of scale are contributors to the bottom line. We believe 1992 will provide challenging global opportunities that our strong balance sheet will enable us to exploit."

J. Peter Grace, chairman and chief executive officer of W. R. Grace, says, "Given the continued severe recessionary times being experienced worldwide, we are encouraged by the strength of Grace's core businesses in specialty chemicals and health care. We are also confident that Grace's new worldwide business strategy announced in November 1991 will lay the groundwork for earnings growth in 1992 and beyond."

Even companies with earnings declines in the fourth quarter are moderately optimistic. Dow's Popoff says, "Pricing in 1991 was very poor and remains a challenge in 1992. However, operating rates at 85% compare favorably with the 65% rate experienced during the 1982 recession, suggesting a quick return to acceptable margins once demand recovers." □



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